

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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In the Matter of:	)	Docket No. 72-22-ISFSI
PRIVATE FUEL STORAGE, LLC	)	ASLBP No. 97-732-02-ISFSI
(Independent Spent Fuel	)	
Storage Installation)	)	September 7, 2000

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**STATE OF UTAH'S REPLY  
TO APPLICANT'S AND STAFF'S RESPONSES  
TO LATE-FILED CONTENTIONS UTAH LL THROUGH OO  
AND  
MOTION TO AMEND CONTENTION LL**

As permitted by the Board's September 1, 2000 Order (Granting Motion for Leave to File Reply, etc.), the State of Utah hereby replies<sup>1</sup> to the Applicant's and NRC Staff's responses to State of Utah's Request for Admission of Late-filed Contentions Utah LL Through OO (Relating to the DEIS's Analysis of Spent Fuel Transportation Risks) (August 2, 2000) (hereinafter "State's Request"). See Applicant's Response to State of Utah's Request for Admission of Late-filed Contentions Utah LL Through OO (August 30, 2000) (hereinafter "Applicant's Response"); NRC Staff's Response to State of Utah's Request for Admission of Late-filed Contentions Utah LL Through OO (August 30, 2000) (hereinafter "Staff's Response"). As demonstrated below, there is no merit to the Applicant's and Staff's arguments against the admissibility of the contentions or the State's satisfaction of the Nuclear Regulatory Commission's ("NRC's" or "Commission's") late-filing criteria. The

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<sup>1</sup> This Reply is supported by the Declaration of Dr. Marvin Resnikoff, attached hereto as Exhibit 1.

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State also moves to amend Contention LL to add a citation that was inadvertently omitted.

## I. ADMISSIBILITY OF CONTENTIONS

### A. Contention Utah LL

Contention LL asserts that the Draft Environmental Impact Statement (“DEIS”)<sup>2</sup> for the Private Fuel Storage, LLC (“PFS”) facility underestimates the risks posed by transportation of spent fuel because it ignores two elements of the project which affect the transportation risks:

1. The DEIS ignores the impacts of incident-free transportation that result from the loading of fuel and from the intermodal transfer from trucks to railheads near reactor sites; and
2. The DEIS does not describe the type of railroad cars to be used for transporting casks to the PFS facility, or evaluate the accident risks posed by putting extremely heavy loads on the rails.

State’s Request at 9, 12. Both the Applicant and Staff oppose the admissibility of the contention. Applicant’s Response at 13-19, Staff’s Response at 14-24.

#### 1. Subpart 1

The Applicant begins by commenting, without more, that the State has failed to allege that any of the reactor sites are “in the region of the PFSF.” Applicant’s Response at 14. If this bare comment is meant to be an argument that the issue is not litigable because the reactors are not close enough to the PFS facility to fall within the region of the facility, it is without merit. Nothing in the NRC’s environmental regulations limits the size of the

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<sup>2</sup> NUREG -1714, *Draft Environmental Impact Statement for the Construction and Operation of an Independent Spent Fuel Storage Installation on the Reservation of the Skull Valley Band of Goshute Indians and the Related Transportation Facility in Tooele County, Utah*, June 2000.

“region” that must be studied in the EIS to any particular fixed geographical radius of an ISFSI. The language of the preamble to the regulation that is quoted by the Applicant specifically embraces transportation in the scope of the “region” that must be evaluated, requiring “an evaluation of the environmental impact of the ISFSI on the region in which it is located, *including the transportation that is involved.*” Final Rule, Licensing Requirements for the Storage of Spent Fuel in an Independent Spent Fuel Storage Installation, 45 Fed. Reg. 74,693, 74,695 (November 12, 1980) (emphasis added); *see also* Applicant’s Response at 16 (same quote, different emphasis). As the Commission further stated in promulgating the regulation:

The regions around an ISFSI site *will vary in geographical area and location* depending upon the event being evaluated to determine the impact on the ISFSI. A region has the purpose of defining the area within which such an event can have an impact on the public health and safety or environment. This impact must be assessed from the consequences postulated for the events evaluated.

Id. at 74696 (emphasis added). The licensing of the PFS facility involves a project that is national in its scope: the transportation of spent fuel from various locations around the entire continental United States to a centralized storage facility in Utah.

The basis of this subpart asserts that the DEIS’s focus on transportation from the Maine Yankee reactor is inappropriately narrow because Maine Yankee has direct rail access, while 14 of the 19 reactors owned by PFS members do not. State’s Request at 9-10. The State contends that the DEIS should examine the environmental impacts of intermodal transfer at these other facilities because it will be necessary to transfer spent fuel from truck to rail. Id. at 9-12. The Applicant and Staff contest the factual accuracy of the State’s

assertion that 14 out of 19 reactors owned by PFS members do not have direct rail access, claiming that the State has misread a table in the DEIS<sup>3</sup> for the Yucca Mountain repository. Applicant's Response at 14, Staff's Response at 16. First, the Applicant and Staff dispute the number of PFS member reactors. PFS claims it has 22 members, and the NRC asserts there are 20. *Id.*, respectively. The State relied on the original list of PFS member utilities, provided early in discovery, in its determination of the number of reactors. The number of PFS members obviously is not static, as is noted by the Staff (footnote 13, "This list [of PFS-owned reactors], of course, is subject to change in view of the ongoing trends involving industry integration and acquisitions."), and has changed several times since the application was filed. The important consideration is that the State has relied on a reasonably accurate number.

The Applicant and Staff also argue that Table J.12 in the Yucca Mt. DEIS does not show there are 14 PFS member reactors without direct rail access. Applicant's Response at 14; Staff Response at 16-17. The State agrees that by itself, Table J-12 does not identify all 14 PFS member reactors without direct rail access. In addition to Table J.12, the State also relied on Table 1 of a U.S. Department of Energy ("DOE") document entitled "Concept of Operations for the Multi-Purpose Canister System" (September 30, 1993) (hereinafter "MPC Concept Document"). A copy of the relevant pages is attached hereto as Exhibit 2. Using the table column entitled "MPC System" of Table 1, it is seen that only 5 of the 19 reactors

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<sup>3</sup> Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada (July 1999), U.S. Department of Energy ("Yucca Mt. DEIS").

listed by the State are listed as being likely to ship via rail without any intermodal transfer. The State hereby requests that it be permitted to amend the contention to reference Table 1 of the MPC Concept document. The omission resulted from a clerical error that was not detected during proofreading of the contentions. Given the length and complexity of the contentions, the State submits that the error is excusable.

Whether or not the Board grants the State's motion, the Applicant's and Staff's responses demonstrate that, even without reference to the other DOE issuance for which the State inadvertently omitted the citation, Table J-12 provides more than sufficient support for the State's concern that the environmental impacts of intermodal transfer for reactors without direct rail access should be considered in the DEIS. The Applicant concedes that there are five PFS member-owned reactors which are not listed as having direct rail access in Table J-12: Oyster Creek, St. Lucie 1 and 2, and Turkey Point 3 and 4. Applicant's Response at 14. The Staff does not list these four, but identifies two other PFS member-owned reactors, Indian Point 1 and 2, which "may be expected to move SNF via heavy-haul vehicles to the railhead." Staff's Response at 17. In addition, the Staff concedes that spent nuclear fuel "may not now be shipped from Monticello and LaCrosse by rail cask."<sup>4</sup> *Id.* at

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<sup>4</sup> Staff argues that cranes can be upgraded, and faults the State for not asserting "any reason to believe the Monticello and LaCrosse reactors would not ultimately be able to use direct rail transport." Staff's Response at 17 n. 16. This argument attempts to shift the Staff's burden to the State. It is the Staff's responsibility to prepare an accurate EIS, and to identify any assumptions about prospective changes on which it relies. Moreover, the fact that an upgrading of a reactor to accommodate rail access may not be as simple a matter as the NRC Staff implies. Even if a larger crane can be installed, the reactor bay may not be large enough to accommodate the large transportation casks needed for shipment to PFS's proposed facility.

17, n. 16. This adds up to nine PFS member reactors for which, taken together, the Applicant and Staff concede currently lack direct rail access. Thus, using only the information conceded by the Applicant and the Staff, 41% of PFS-owned reactors (9 out of 22) will require some form of intermodal transfer. The State's previous estimate of the additional dose due to this transfer may be scaled by a factor of 9/22 to obtain an estimate of the additional dose due to transfer and transportation operations. Multiplying the 127.2 person-rems per year calculated in State's Request at 11 by 9/22, an additional population dose of 52 person-rems per year due to intermodal transfer operations at the reactor end of the shipping campaign is obtained. Concededly, this is a smaller dose than calculated in the Utah LL, but it must be considered nevertheless. Once an EIS is required or underway, all reasonably foreseeable and consequential impacts must be looked at whether or not they are significant enough to trigger an EIS by themselves.

The Staff also challenges the State's "apparent belief that heavy haul transport will be utilized by all reactors that lack direct rail access." Staff's Response at 17. First, it must be noted that the DEIS and the Applicant's Environmental Report both lack a discussion of intermodal transfer of any kind on the reactor end of the proposed transportation campaign. Regardless of the type of transportation used to travel to a railhead from reactors lacking the ability to directly load rail casks onto a train, there will be additional exposures to workers involved in the transfer from one mode of transfer to rail. Further, the transport of fuel via truck or barge will result in additional exposures to the public along the route of travel. Second, the Yucca Mt. DEIS assumed in its analysis that the commercial sites lacking direct rail access used "heavy-haul trucks to move the rail casks to nearby railheads." Yucca Mt.

DEIS at J-73. The Staff's assertion that heavy haul trucks are not the only mode of transportation to an off-site railhead fails to change the fact that both the Staff and the Applicant have performed an inadequate assessment of the transportation impacts involved with intermodal transfer near reactors which are resultant from the proposed construction and operation of the PFS facility.

The Applicant and Staff also argue that the State used an incorrect population figure in calculating doses. Applicant's Response at 15, Staff's Response at 18. The exact population densities near the 14 PFS member-owned reactors that lack direct rail access cannot be determined precisely without significant time and effort. It is certainly reasonable to presume that because nuclear reactors often serve urban and suburban areas, the average population density would be significantly higher than the 1.3 persons/km<sup>2</sup> assumed by the DEIS for the rural route between the Timpie intermodal transfer facility and the PFS facility. Therefore, it was reasonable for the State to rely on the default suburban population density used in RADTRAN.<sup>5</sup>

In addition, the Staff claims that the State exaggerates the shipping distance for heavy haul transport. Staff's Response at 18. The Staff claims that these distances will vary from reactor to reactor, "and could be much shorter than the 26 miles from the ITF to the PFS site." *Id.* In a similar argument to the one posed without basis by the Staff, the heavy-

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<sup>5</sup> The fact that the population density of Salt Lake City is lower than the average suburban population density in the United States does not make the State's reliance on this figure any less reasonable. The State was attempting to estimate the population density near the originating reactors (most of which are in coastal or midwestern areas), not near Salt Lake City.

haul distances could be much *longer* than the 26 miles from the ITF to the PFS site. The DEIS for the Yucca Mountain facility evaluated heavy-haul distances for 19 reactors, finding that the distances ranged from 4 to 47 miles. DEIS at J-73. Clearly, the State's choice of a 26-mile haul distance is reasonable, as it represents a central estimate between the values given in the Yucca Mountain DEIS. The State relied on the intermodal transfer distance given in the DEIS because it is the only one given in the document. By stating that the distance could be "much shorter" than the 26 miles used in the analysis, the Staff unfairly and without basis implies that the State is overstating distances, when the State may in actuality be understating them.

Finally, the Staff contends that even if the State is correct about the neglected radiological impacts of intermodal transfer on workers and the public, the additional dose is not cognizable because it falls within the range of doses deemed acceptable in NUREG-0170, the NRC's generic EIS on impacts of radioactive material transportation. Staff's Response at 20. This comparison is invalid. While NUREG-0170 is based on 652 shipments per year, the PFS shipments are estimated at 200 per year. In the PFS case, the dose per cask estimate is higher than the NRC Staff's dose estimate in NUREG-0170 in terms of person-sieverts per cask. The Staff goes on to say that the average dose is small fraction of regulatory limits and a fraction of background dose. Staff Response at 21, n. 20. The State does not agree. However, the dose from spent fuel transportation is *in addition* to

the background dose. If it is anthropogenic cause of cancer it should be looked at in the EIS.<sup>6</sup>

## 2. Subpart 2

The Applicant concedes that rigid 3-axle freight car trucks have a higher probability of derailment than the standard railroad cars evaluated in the DEIS.<sup>7</sup> Applicant's Response at 18. However, the Applicant argues that the State has not demonstrated that PFS intends to use 3-axle freight trucks for rail transportation. *Id.* at 18-19. The NRC Staff makes the same argument. Staff's Response at 22-23. The Applicant's Response constitutes the first time and place it has stated that it does not intend to use rigid 3-axle freight car trucks. However, this statement is not reflected in the SAR. Moreover, it is not unequivocal. Whatever the Applicant's intention may be, it has not fully committed itself to any particular type of freight car. The Conlon letter, attached as Exhibit 2 to the State's Request, certainly indicates that rigid 3-axle freight cars are under consideration, and may be necessary to accommodate the unusually heavy loads posed by spent fuel transportation casks. Moreover, it demonstrates that other freight cars under consideration also have problems, and that the steerable 3-axle trolley, suggested by Applicant in its Response at 19, has not yet

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<sup>6</sup> It should also be noted that NUREG-0170 based on RADTRAN 2, excludes numerous incident-free factors, such as dose to inspectors, handlers, security personnel and reactor personnel readying a transportation cask.

<sup>7</sup> The Applicant asserts that the State incorrectly uses the term "Maxson." Applicant's Response at 18, note 18. The terminology used to describe 3-axle freight cars is not a relevant issue here. However, the State would point out that PFS has previously used the term to describe 3-axle freight cars. Memorandum from John L. Donnell to Stanley M. Macy (March 13, 1998) (this PFS discovery document is not attached because it is stamped by PFS as "Confidential").

been tested. Accordingly, unless and until the Applicant provides a firm commitment not to use rigid 3-axle freight trolleys, it must be assumed that they remain under consideration and may be used.<sup>8</sup>

**B. Contention Utah MM**

**1. Subpart 1**

In Contention Utah MM, the State argues that the DEIS should have employed the accident rate for routes actually taken for spent fuel shipments, rather than the national average accident rate. PFS contends that this position is unreasonable, because it does not yet know which reactors will ship spent fuel to the PFS facility, nor has it selected rail routes. Applicant's Response at 20. The Applicant's argument misses the point here, which is that the DEIS is internally inconsistent in a nonconservative manner. For some purposes, the DEIS claims to examine a representative route from the Maine Yankee plant to the PFS facility, and uses the Interline computer program to identify a route. Yet, when it comes to evaluating accident probabilities, the DEIS does not evaluate the route chosen; instead, it uses the national average. As discussed in the contention, this is inconsistent with the fact that the route identified in the DEIS uses tracks that are less well-maintained than mainline passenger tracks that are included in the national average, and are also more circuitous. The

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<sup>8</sup> The Staff argues that because PFS has committed to meet American Association of Railroad ("AAR") standards, there is no basis for the State's belief that PFS may use inappropriate rail cars. Staff's Response at 22-23. As discussed in the Conlon letter, however, the AAR has not yet developed performance specifications for rail cars that will carry spent fuel. *Id.* at 1. In any event, even if the AAR does develop such specifications, it does not necessarily follow that the accident rate for 3-axle freight trucks will be the same as for other types of rail cars.

NRC Staff could have and should have determined the accident rate along the Maine Yankee-to-PFS route identified in the DEIS, or determined the accident rate along likely routes from the 20-odd PFS consortium members, using INTERLINE to choose the routes.<sup>9</sup>

The NRC Staff, for its part, appears to completely misunderstand the contention, appearing to believe that the contention criticizes the DEIS's use of a representative route from Maine Yankee to the PFS facility. As discussed above, the State is not concerned about the DEIS's use of a representative route, but the failure to consistently look at individual routes for all purposes. As the Staff correctly points out, the INTERLINE program selects routes that are longer (and thus more conservative), and also routes of higher traffic. Staff's Response at 25. Thus, looking at the routes chosen by INTERLINE may well yield accident rates that are higher than the average national rail accident rate.<sup>10</sup> Thus, a genuine dispute of material fact has been raised; the DEIS's use of the national average accident rate is both internally inconsistent and nonconservative.

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<sup>9</sup> PFS also argues that the use of dedicated trains will result in accident rates well below the national average. Applicant's Response at 21, citing DEIS at 5-35. Thus, according to the Applicant, the national average rail accident data used in the DEIS can be expected to bound the accident rate for the PFS facility. Without having a more reasonable calculation of the likely accident rate for the plant-to-PFS routes, however, this is simply an unfounded leap of faith.

<sup>10</sup> Contrary to the Staff's assertion, the State does not seek a "worst case" analysis, *i.e.*, an analysis of a remote and speculative possibility. *See* Staff's Response at 26. Rather, it seeks a reasonable and conservative analysis of a risk factor that has already been identified as foreseeable and therefore worthy of consideration in the DEIS.

## 2. Subpart 2

The Applicant opposes this subpart of the contention, on the ground that the State has failed to show why NRC Staff acted unreasonably in using the more up-to-date Saricks study rather than the older Modal Study for purposes of estimating transportation accident rates. Applicant's Response at 21-23. The central point of the State's argument does not rest solely on the fact that the Staff used accident data obtained from the ANL study (Saricks and Kvittek, 1994). Rather, it is the fact that the DEIS utilized accident frequencies from one study (Saricks and Kvittek) and conditional probabilities of accidents from another study (Modal Study). If the ANL study eliminated certain "minor" accidents, such as grade crossings, but the Modal Study included these accidents in determining the conditional probabilities of accidents, then the use of both studies is incorrect. By taking out minor accidents from the accident probability (how many accidents occur) but leaving these accidents in the conditional probability (how many accidents that occur are "minor"), the resulting distribution is improperly shifted toward concluding that severe accidents are less likely. If "minor" accidents are going to be removed from the accident probability distribution, they must also be removed from the conditional probability distribution. This is the crux of the State's argument. Because the minor accidents were not removed from the conditional probability calculation, the DEIS's calculation of the probability of a Category 6 accident is too low. Neither the Applicant nor the Staff addresses this internal inconsistency in the DEIS's probability calculations. The Staff's response to Subpart II of Contention MM echoes this argument: "Further, including minor, non-reportable incidents in the database would inflate the number of Category 1 accidents, thus lowering the conditional probability

of Category 6 accidents.” Staff’s Response at 34 (emphasis in original).

The State is arguing that the Modal Study included minor accidents in developing the conditional probabilities of severe accidents, but the Saricks study excluded minor accidents in developing the accident rate. Because of this inconsistency, the Staff is correct in asserting that this lowers the “conditional probability of Category 6 accidents.” The State contends that either the Modal Study accident rate (the rate the Modal Study used in determining conditional probabilities) be used or a new set of conditional probabilities be constructed using the data from the Saricks study.

The Staff also argues that the State has not raised a genuine and material dispute because even if the State is correct about the accident probability for transportation to the PFS facility, it is so low that it would not change the ultimate conclusion of the DEIS that the radiological consequences of spent fuel transportation to the PFS facility are small. Staff Response at 28. This argument ignores the requirement of NEPA that adverse environmental impacts must be evaluated in a DEIS, even if their likelihood is relatively low, as long as they are reasonably foreseeable. The fact that the probability of a rail accident is relatively low does not excuse the Staff from NEPA’s requirement for reasonable accuracy in describing the environmental impacts of the PFS project. Nevertheless, the State does calculate the probability of a severe accident and shows that it is, without question, large enough to be considered in the DEIS.

### 3. Subpart 3

Both the Applicant and the Staff argue that the State has not supported its assertion that the DEIS should assume a higher release fraction for CRUD during an accident.

Applicant's Response at 23-25, Staff's Response at 28-30. Their arguments are without merit.

First, the Applicant creates and attacks a straw man by claiming that the State has insisted that 100% release fraction must be used. Applicant's Response at 24. The State has provided examples of instances in which a 100% release fraction was used. The State has also demonstrated that if the release fraction were 100%, radiation doses for one week would rise by 10%. The State has met its burden of demonstrating that the CRUD release fraction used in the DEIS is too low; it is not required to defend a specific release fraction for purposes of gaining admission of this contention.

The Applicant also claims that the State erroneously cites other instances in which a 100% release fraction was used. According to the Applicant, the Yucca Mountain DEIS uses exactly the same  $2 \times 10^{-5}$  particulate release fraction for Severity Category 6 that the PFS DEIS uses. Applicant's Response at 24. The State's contention is that the use of the same release fraction for spent fuel particulates and CRUD is improper. There is no information in the DEIS for the Yucca Mountain repository concerning whether the DOE considered CRUD differently from other particulates in its risk assessment using the RADTRAN 4 computer code. However, the State's contention MM is concerned with the *consequences* of severe accidents, not the *risks*. Subpart 3 of the State's Contention MM specifically states that "[t]he DEIS underestimates the radiological *consequences* of a Severity Category 6 accident, by underestimating the release fraction for CRUD." State's Contentions at 17 (emphasis added). In the DEIS for the Yucca Mountain facility it is clearly stated that the RISKIND computer code was used to estimate the *consequences* of severe accidents (*see*

Yucca Mt. DEIS at J-60, J-61). This program treats CRUD in a different manner than it treats other spent fuel particulates, principally because CRUD can be released without a breach of the fuel rods. This program holds as its default assumption that, in the event of a Category 6 accident, 100% of CRUD will be spalled from fuel rods and cask surface areas and released into the environment.

The Applicant also argues that the assumption of 100% spalling of CRUD from fuel rods into the interior of a cask does not necessarily translate to the release of CRUD to the environment. Applicant's Response at 24. The ability of spalled CRUD to transport through a compromised leak path from a cask to the environment is a strong function of particle size. See SAND88-1358 at 23. The ability to correctly model the amount of spalled CRUD that could be released into the environment, provided a leak pathway is available, is therefore dependent on an accurate particle size distribution for the CRUD. However, the RISKIND user's manual states that "very little information is available for CRUD particle size distribution of the spalled crud." Yuan et al, 1995, *RISKIND - A Computer Program for Calculating Radiological Consequences and Health Risks from Transportation of Spent Nuclear Fuel*, ANL/EAD-1, Argonne National Laboratory) at D-8. In the absence of any data, RISKIND takes the conservative step of assuming that all spalled crud is released into the environment for "all U.S. Nuclear Regulatory Commission modal study response regions except region R(1,1), for which no release is assumed because no leak path has been identified." *Id.* at D-8.

The Staff argues that the State has not identified a "driving force" for the release of CRUD. According to the RISKIND user's manual (see citation above), all modal study response regions except region R(1,1) are assumed to result in a 100% release of all spalled

CRUD to the environment. RISKIND at D.8. A Sandia National Laboratory study of the CRUD response to accident conditions assumes a 100% spallation fraction for “spallation due to impact, shock, and vibration loadings characteristic of transport conditions.”

SAND88-1358 at 41. Further, the RISKIND user’s manual states that a spallation fraction of 1.0 is assumed for spallation due to impact- or shock-related forces, and for all levels of mechanical loads above the 0.2% strain level. RISKIND at D-8. These are clearly “driving forces” for the release of CRUD.

Finally, the Applicant argues that the State has no basis for assuming that Cobalt-60 is found inside the spent fuel as well as outside of it. Applicant’s Response at 25. According to the Applicant, Cobalt-60 is not expected to be found inside spent fuel in any significant amounts, because it is not a fission product. *Id.* The State agrees with the Applicant that Cobalt-60 is not a fission product. It is created via the activation of Cobalt-59 contained in the metal fuel assemblies and the reactor, and is not expected in significant quantities inside of fuel pellets themselves. The State’s statement that Cobalt-60 is found both “inside and outside” the fuel is intended to refer to the fact that Cobalt-60 can be found inside the metal structures of the fuel assemblies, in addition to being contained in the CRUD. The State is assuming that the particulate release fraction used for Cobalt-60 by the Staff and the Applicant was used for the Cobalt-60 contained in the fuel assemblies and not in the CRUD, since the release mechanism for the CRUD is significantly different than that for the spent fuel particulates.

### C. Contention NN

In this contention, the State asserts that the DEIS is deficient because it describes the environmental impacts of the PFS facility only in terms of risk for six categories of accidents, instead of explaining what the consequences would be if any of those six accidents were to occur.

The Applicant argues that presenting impacts in terms of risk is a well-established practice, citing NUREG-0170, the FEIS for Transportation of Radioactive Material by Air and Other Modes (1977); and the DEIS for Yucca Mountain. Applicant's Response at 26. This assertion is incomplete and misleading. While both of these EISs do present impacts in terms of risk, they also present the consequences of the accident scenarios that are evaluated. See, e.g., Yucca Mt. DEIS at Appendix H (cited in State's Request at 21); NUREG-0170 Figures 5-12 through 5-14, Tables 5-13 and 5-14.<sup>11</sup>

The Staff, for its part, argues that the State failed to meet some requirement that it must postulate a credible accident and demonstrate that it is not remote and speculative and that its consequences would be more severe than the effects analyzed in the DEIS. Staff's

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<sup>11</sup> For instance, Figure 5-12 is a graph of "Area Contaminated to a Level of 0.65 uCi/m<sup>2</sup> for a Given Release." Figure 5-13 is a graph entitled "Decontamination Costs for Releases of Long-Lived Isotopes." Figure 5-14 is a graph entitled "Decontamination Costs for Releases of Short-Lived Isotopes." Table 5-12 is entitled "Integrated Population Dose and Expected Latent Cancers from Certain Class VIII Accidents in High-Density Urban Areas," and separately depicts the consequences and the probability of certain accidents. Table 5-13 is entitled "Number of People Receiving Doses Greater Than Or Equal to Various Specified Acute Doses (in Rems) of Interest in Certain Class VIII Accidents in High-Density Urban Areas." Table 5-14 represents "Early Fatalities and Decontamination Costs - Class VIII Accidents - Extreme Density Urban Areas." None of this type of information is presented in the DEIS for the PFS facility.

Response at 31. The Staff misses the State's point completely. This contention seeks a meaningful consequence analysis of the foreseeable accidents which are reasonably deemed worthy of consideration in the DEIS. These include accidents deemed by the Staff to be worthy of consideration, and accidents on which the State is able to persuade the Licensing Board that the risks are high enough to be worthy of consideration. The State contends that the Staff has wrongly presented information about the risks of these accidents without addressing its consequences. This violates the NEPA rule of reason that an EIS must be written in a fashion that enlightens and assists government decisionmakers in weighing the costs and benefits of their actions. *See* 40 CFR § 1502.22. Rather than informing decisionmakers of the possible health and economic consequences of their decisions, the DEIS requires them to be content with an abstraction of the overall risk. This is hardly a sufficient basis for weighing alternatives or evaluating mitigative measures.<sup>12</sup>

Finally, the Staff seems to argue that any problems with the PFS DEIS are a “no-never-mind” because the transportation impacts are embraced in the Commission's Part 71 environmental analysis, as reported in NUREG-0170. NUREG-0170, however, did not contemplate shipping a huge fraction of the country's spent fuel to a single repository, located 45 miles outside of Salt Lake City, within the space of 20 years. NEPA requires that the public -- and in this case, particularly the citizens of Utah -- be presented with an EIS for

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<sup>12</sup> The Staff's position is not aided by City of New York v. U.S. Department of Transportation, 715 F.2d 732, 751 (2<sup>nd</sup> Cir. 1983). *See* Staff's Response at 34. There, the Court affirmed the Department of Transportation's decision not to prepare an EIS for transportation of radioactive waste via highways. The Court determined that an overall risk assessment was sufficient for purposes of an *Environmental Assessment*, not a full-blown EIS.

this project that evaluates the health and economic impacts that would result from storing most of the nation's commercial spent nuclear fuel in Utah. In any event, the important factor to bear in mind is that the EIS for the PFS facility is a tool that will be used by government officials to make important decisions, and it will also be the primary tool that the public uses to understand the impacts of the PFS facility. Now that the Staff has taken on the task of preparing an EIS for this project, it must prepare the thorough, competent and informative report that is required by NEPA.

**B. Contention OO**

This contention seeks an economic risk and consequences analysis for a serious rail accident. The State has provided an example of an economic consequence analysis to illustrate the significance of this omission. Both the Applicant and Staff oppose admission of the contention, on grounds that are without merit.

First, the Applicant argues that an economic analysis is not required, relying on the use of the word "should" in 10 C.F.R. § 51.71(d). Applicant's Response at 28 and note 30. NEPA is a statute that requires application of the rule of reason. The choice of the word "should" carries with it the implicit directive that if a topic is relevant, it must be addressed. The economic analysis provided by the State demonstrates that economic consequences are relevant and important, notwithstanding the Applicant's arguments.<sup>13</sup>

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<sup>13</sup> The Applicant attempts to attack the State's economic analysis on the ground that it wrongly assumes 100% release of the CRUD inventory. As discussed above with respect to Contention LL Subpart 3, it is reasonable and consistent with other studies to assume a 100% CRUD inventory. In any event, this issue is a red herring, because CRUD actually makes a relatively small contribution to the overall radiological release during a Category 6 accident.

Second, the Applicant argues that the State's claim of undisputedly large costs is inconsistent with Table S-4, which assumes that radiological effects of transportation accidents are "small." Applicant's Response at 28, n. 31. As footnote 4 of Table S-4 explains, the term "radiological effects" as used in the table refers to the risk of a transportation accident, not the consequences of a maximum credible accident.

Finally, the Staff faults the State for failing to identify a "causative mechanism" for the accident on which it seeks an economic analysis. Staff's Response at 36. Once again, the Staff misses the point of the contention. The DEIS identifies six categories of accidents, but fails to provide an economic risk or consequence analysis for any of them. It is up to the Staff in the EIS to define what is the maximum credible accident and provide the appropriate analysis. As discussed above, the State believes that the Staff's DEIS has underestimated the likelihood of a Category 6 accident, and therefore it is an appropriate model for an economic analysis. The Staff may or may not decide otherwise, but in the EIS it must provide an economic analysis of the risks and consequences of a severe but foreseeable transportation accident.

## **II. SATISFACTION OF LATE-FILING CRITERIA**

Both the Applicant and Staff argue that the State has not met the Commission's criteria for late-filed contentions. Applicant's Response at 3-12, Staff's Response at 8-12.

First, both the Applicant and Staff contend that the State lacks good cause for the late filing. The Applicant starts by measuring lateness against the date when the DEIS became publicly available, pointing out that the Board set a 30-day time frame for the filing of environmental contentions. Applicant's Response at 3. The Board's scheduling order

was issued in 1998. The State regrets that it did not recall this order when it filed its environmental contentions. As stated in its Request, the State was in the midst of an adjudicatory hearing when the DEIS came out, and subsequently was taken up with the preparation of proposed findings and the filing of Contention KK. The State was aware of a general “rule of thumb” setting 30 days as a reasonable time frame for filing contentions, and made every effort to file Contentions LL through OO within 30 days, but found it necessary to take an additional nine days. The State submits that, given the number and significance of its other burdens, this was a reasonable period of time. Moreover, the fact that the State’s expert was not involved in the hearings did not make it any easier to file contentions within 30 days, as the attorneys needed to draft the contentions and consult with the expert, and were in hearings and were unable to do so. Finally, it does not appear that the taking of an additional nine days will affect the overall schedule for this proceeding. The Board has already set a July 9 - August 3, 2001 date for a hearing, which is quite far off. See Attachment to Board’s scheduling order of September 5, 2000.

The Staff only addresses late-filed factors with respect to Contentions OO and the portion of Contention NN pertaining to economic issues. Staff’s Response at 6, 8-9. Thus the Staff appears to concede that the State has good cause for the late-filing contentions LL, MM, and NN (not relating to the need for an economic analysis). By also failing to address the lateness factor, the Applicant appears to concede that the State has good cause for Subpart 3 of Contention LL, and subpart 3 of Contention MM. Applicant’s Response at 8-9. With respect to the other contentions and portions thereof, they contend that the State could have raised the issues earlier.

Many of the Applicant's objections rest on the question of whether the State could have raised an issue with respect to the Applicant's Environmental Report ("ER"). For instance, the Applicant argues that the State previously could have raised its concerns about intermodal transfer near reactor sites, the type of trolley used for rail car transportation, the calculated accident rate, and the ER's failure to describe accident consequences. Applicant's Response at 7-9. Both the Applicant and the Staff also agree that the State could have raised its concern about the lack of an economic risk and consequence analysis with respect to the ER. Applicant's Response at 9, Staff's Response at 9.

These arguments ignore the fact that at the time the ER was written, the Applicant was relying for its evaluation of transportation impacts on Table S-4 in 10 C.F.R. Part 51. By virtue of this reliance, the State appears to have been precluded from making any challenge to the Applicant's evaluation of transportation impacts in the ER, other than to claim that the requirements for invoking Table S-4 were not satisfied and therefore PFS could not rely on it. See the Board's decision on the admissibility of Utah Contention V, LBP-98-7, 47 NRC 142, 199-201 (1998). Although LBP-98-7 is somewhat cryptic, the Board seems to have agreed that the Applicant was entitled to rely on the evaluation of environmental impacts that is summarized in Table S-4. Thus, it would have been futile for the State to raise any of the issues that are now put forth in Contentions LL through OO. Nothing in the Commission's regulations requires a party to raise an issue merely for its own satisfaction - there must be some utility to the exercise. It would have been pointless to

raise these issues earlier.<sup>14</sup>

Moreover, as the State has set forth at pages 1 to 7 of its Request, the State should be allowed to litigate these contentions because “there are data or conclusions in the NRC draft . . . environmental impact statement . . . that differ significantly from the data or conclusions in the applicant’s document.” State’s Request at 3. Apparently agreeing with some of the State’s concerns about the outmoded and inadequate nature of the analysis supporting Table S-4, the Staff completely abandoned it in the DEIS. Both the data and the methodology used in the DEIS constitute a radical departure from the studies used to support Table S-4. To borrow a phrase, the DEIS therefore opens “a whole new ball game.” The context of the environmental analysis for transportation to and from the PFS changes completely in the DEIS. Given this major contextual change, it is impossible to pick and choose small portions that are the same or different. It is also worth noting that the standard in 10 C.F.R. § 2.714(b)(2)(iii) allows the filing of environmental contentions where “there are data and conclusions that differ significantly.” It appears that the Commission did not intend to require an intervenor to hunt and peck for minor changes, but would permit the filing of contentions where there was a general change in the approach to the environmental problem.

The Applicant and Staff also argue that the State has other means to protect its interests, because it can file comments on the DEIS. Staff’s Response at 11. This argument

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<sup>14</sup> Notably, the State did succeed in gaining the admission of its concern that the weight of a shipping cask precludes the Applicant from relying on Table S-4. This issue is indirectly related to Contention LL, Subpart 2.

is disingenuous. The State's "interest" under NEPA is to ensure the preparation of a complete and accurate EIS for the PFS project. While the State may have the ability to comment on the DEIS, this by itself is not sufficient to protect the State's interest. The hearing process gives the State the opportunity to fully present its concern in an adversarial setting. The mere opportunity to comment cannot be compared to formally contesting the issues before the Board.

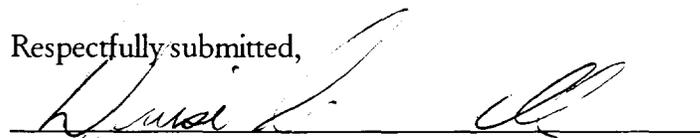
The Applicant complains that "factual gaps" in the State's Request show that it will not be able to assist in the development of a sound record. Applicant's Response at 12. The lack of merit of this argument is addressed above in the context of each contention. The Staff concedes that the participation of the State may be expected to assist in the development of a sound record, but argues that admission of the contentions will broaden and delay the proceeding. Staff's Response at 11. This argument has no merit for legal and practical reasons. First, the State has a legal right under NEPA to raise concerns about the adequacy of the environmental review for the PFS facility. While the NRC may impose some reasonable procedural limits on this right it would be unreasonable and unlawful to exclude a contention for the sole reason that it would broaden or delay the proceeding. Second, the schedule established by the Board is more than adequate to accommodate these additional issues. Accordingly, a balancing of the late-filed factors favors admission of Contention LL through OO.

III. CONCLUSION

For the foregoing reasons, Contentions LL through OO should be admitted.

DATED this 7th day of September, 2000.

Respectfully submitted,



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CERTIFICATE OF SERVICE

I hereby certify that a copy of STATE OF UTAH'S REPLY TO APPLICANT'S AND STAFF'S RESPONSES TO LATE-FILED CONTENTIONS UTAH LL THROUGH 00 were served on the persons listed below by electronic mail (unless otherwise noted) with conforming copies by United States mail first class, this 7<sup>th</sup> day of September, 2000:

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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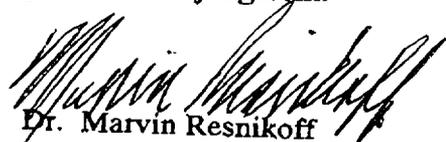
In the Matter of:	)	Docket No. 72-22-ISFSI
	)	
PRIVATE FUEL STORAGE, LLC	)	ASLBP No. 97-732-02-ISFSI
(Independent Spent Fuel	)	
Storage Installation)	)	September 7, 2000

**DECLARATION OF DR. MARVIN RESNIKOFF IN SUPPORT OF  
STATE OF UTAH'S REPLY TO APPLICANT'S AND STAFF'S RESPONSES TO  
LATE-FILED CONTENTIONS UTAH LL THROUGH OO AND MOTION TO  
AMEND CONTENTION LL**

I, Dr. Marvin Resnikoff, hereby declare under penalty of perjury and pursuant to 28 U.S.C. § 1746, that:

1. I am the Senior Associate at Radioactive Waste Management Associates, a private consulting firm based in New York City. I prepared a Declaration in support of the State of Utah's Request for Admission of Late-filed Contentions Utah LL through OO, dated August 2, 2000, which is incorporated herein by reference.

2. I assisted in the preparation of the State of Utah's Reply to Applicant's and Staff's Responses to Late-filed Contentions Utah LL Through OO and Motion to Amend Contention LL. The technical facts presented in the Reply are true and correct to the best of my knowledge, and the conclusions drawn from those facts are based on my best professional judgment.

  
Dr. Marvin Resnikoff  
September 7, 2000

DOC ID: A00000000-01717-2200-00001 REV 00  
WBS: 9.2.1  
QA: N/A

**Civilian Radioactive Waste Management System  
Management and Operating Contractor**

**OPERATIONAL THROUGHPUT FOR THE  
MULTI-PURPOSE CANISTER SYSTEM**

**Revision 0**

**September 30, 1993**

**Prepared for:**

**U.S. Department of Energy  
Office of Civilian Radioactive Waste Management  
1000 Independence Avenue, S.W.  
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**Under Contract Number  
DE-AC01-91RW00134**

## EXECUTIVE SUMMARY

This report presents the operational throughput data developed for the Multi-Purpose Canister (MPC) system and for the reference scenario, against which the MPC system will be compared. Data is developed for each of the system elements: waste acceptance/utilities, transportation, Monitored Retrievable Storage (MRS), and Mined Geologic Disposal System (MGDS). This data supports the evaluation and analysis of the Civilian Radioactive Waste Management System (CRWMS) for the MPC system. Operational throughput includes data on the number of assemblies, MTU, and casks arriving at CRWMS facilities on an annual basis. Also included is information on facility modal capabilities, transportation cask fleet, and number of cask shipments. All system parameter assumptions used developing this data are based on the *Concept of Operations for the Multi-Purpose Canister System* report, which includes a fundamental assumption of a steady-state system throughput rate of 3000 MTU/year.

**APPENDIX A**  
**MODAL CAPABILITY FOR MPC SYSTEM EVALUATION**

## MODAL CAPABILITY FOR MPC SYSTEM EVALUATION

The modal capability for each facility for both the reference scenario and MPC system are provided here.

The base case modal capability used in the MPC system evaluation represents what is actually expected to occur with respect to facility modal capabilities including current and potentially enhanced handling capabilities and transportation infrastructure. These assumptions have been reviewed by the nuclear utilities through the Edison Electric Institute. The modal capability assumptions include some facility modifications and use of heavy-haul and barge to an extent greater than current capabilities but less than the most optimistic projections. This base case modal capability does include some facilities with only truck cask capability and assumes no use of cask-to-cask transfer for uncanistered spent fuel. The MPC system is assumed to use a 100-ton transfer cask to transfer sealed MPCs from the spent fuel pool to the MPC transportation cask at facilities that cannot handle the 125-ton MPC transportation cask. The use of the MPC transfer cask allows the large MPC to be used in as many facilities as possible. There are 121 facilities in total, with modal capabilities for the reference scenario and MPC system summarized as follows:

### Reference Scenario

- 19 facilities with truck cask capability only
- 10 facilities with 75-ton rail cask capabilities with no heavy-haul or barge
- 4 facilities with 75-ton rail cask using heavy-haul
- 43 facilities with 100-ton rail cask with no heavy-haul or barge
- 27 facilities with 100-ton rail cask using heavy-haul
- 18 facilities with 100-ton rail cask using barge.

### MPC System

- 19 facilities with truck cask capability only
- 10 facilities with 75-ton MPC capability with no heavy-haul or barge
- 4 facilities with 75-ton MPC capability with heavy-haul
- 33 facilities with 125-ton MPC with no heavy-haul or barge
- 16 facilities with 125-ton MPC using heavy-haul
- 7 facilities with 125-ton MPC using barge
- 10 facilities with 125-ton MPC using MPC transfer cask
- 11 facilities with 125-ton MPC using MPC transfer cask and heavy-haul
- 11 facilities with 125-ton MPC using MPC transfer cask and barge.

Table 1 presents the modal capability used to develop the operational throughput data on a facility-by-facility basis for both the reference scenario and the MPC system.

Table 1. Modal Capability for Each Facility

Pool	Fuel Type	Reference Scenario	MPC System
Arkansas Nuclear 1	P	R100	R125.Transfer
Arkansas Nuclear 2	P	R100	R125.Transfer
Beaver Valley 1	P	R100	R125
Beaver Valley 2	P	R100	R125
Big Rock Point	B	Truck	Truck
Braidwood 1	P	R100	R125
Braidwood 2	P	R100	R125
Browns Ferry 1	B	R100.Barge	R125.Transfer.Barge
Browns Ferry 2	B	R100.Barge	R125.Transfer.Barge
Browns Ferry 3	B	R100.Barge	R125.Transfer.Barge
Brunswick 1	B	R75	R75
Brunswick 2	B	R75	R75
Byron 1	P	R100	R125
Byron 2	P	R100	R125
Callaway	P	R100.HH	R125.HH
Calvert Cliffs 1	P	R100.Barge	R125.Barge
Calvert Cliffs 2	P	R100.Barge	R125.Barge
Catawba 1	P	R100.HH	R125.HH
Catawba 2	P	R100.HH	R125.HH
Clinton	B	R100.HH	R125.Transfer.HH
Comanche Peak 1	P	R100.HH	R125.HH
Comanche Peak 2	P	R100.HH	R125.HH
Cooper	B	R75	R75
Crystal River	P	Truck	Truck
D.C. Cook 1	P	R100.HH	R125.Transfer.HH
D.C. Cook 2	P	R100.HH	R125.Transfer.HH
Davis Besse	P	R100	R125
Diablo Canyon 1	P	R100.Barge	R125.Transfer.Barge
Diablo Canyon 2	P	R100.Barge	R125.Transfer.Barge
Dresden 1	B	R75 (Transfer To 2&3)	R75 (Transfer To 2&3)
Dresden 2	B	R75	R75
Dresden 3	B	R75	R75
Duane Arnold	B	R100	R125.Transfer
Earley 1	P	R100.HH	R125.HH
Earley 2	P	R100.HH	R125.HH
Fermi 2	B	R100.Barge	R125.Transfer.Barge
Fitzpatrick	B	Truck	Truck
Ft. Calhoun	P	Truck	Truck
Ginna	P	Truck	Truck
Grand Gulf	B	R100.Barge	R125.Barge
H.B. Robinson	P	R75	R75
Haddam Neck	P	Truck	Truck
Harris	B/P	R100	R125
Hatch 1	B	R100	R125
Hatch 2	B	R100	R125
Hope Creek	B	R100.Barge	R125.Barge
Humboldt Bay	B	Truck	Truck

Pool	Fuel Type	Reference Scenario	MPC System
Indian Point 1	P	Truck	Truck
Indian Point 2	P	Truck	Truck
Indian Point 3	P	Truck	Truck
Kewaunee	P	R100.HH	R125.Transfer.HH
LaCrosse	B	Truck	Truck
LaSalle 1	B	R100	R125
LaSalle 2	B	R100	R125
Limerick 1	B	R100.HH	R125.Transfer.HH
Limerick 2	B	R100.HH	R125.Transfer.HH
Maine Yankee	P	R100	R125
McGuire 1	P	R100	R125.Transfer
McGuire 2	P	R100	R125.Transfer
Millstone 1	B	R75.HH	R75.HH
Millstone 2	P	R75.HH	R75.HH
Millstone 3	P	R100.HH	R125.Transfer.HH
Monticello	B	Truck	Truck
Morris	P/B	R100	R125
Nine Mile 1	B	R100	R125.Transfer
Nine Mile 2	B	R100.HH	R125.Transfer.HH
North Anna 1	P	R100	R125
North Anna 2	P	R100	R125
Oconee 1	P	R100.HH	R125.Transfer.HH
Oconee 2	P	R100.HH	R125.Transfer.HH
Oconee 3	P	R100.HH	R125.Transfer.HH
Oyster Creek	B	R100.Barge	R125.Transfer.Barge
Palisades	P	Truck	Truck
Palo Verde 1	P	R100	R125
Palo Verde 2	P	R100	R125
Palo Verde 3	P	R100	R125
Peach Bottom 2	B	Truck	Truck
Peach Bottom 3	B	Truck	Truck
Perry 1	B	R100	R125
Pilgrim	B	Truck	Truck
Prairie Island 1	P	R100	R125.Transfer
Prairie Island 2	P	R100	R125.Transfer
Pt. Beach 1	P	R100.HH	R125.HH
Pt. Beach 2	P	R100.HH	R125.HH
Quad Cities 1	B	R75	R75
Quad Cities 2	B	R75	R75
Rancho Seco	P	R100	R125
River Bend	B	R100.HH	R125.HH
Salem 1	P	R100.Barge	R125.Transfer.Barge
Salem 2	P	R100.Barge	R125.Transfer.Barge
San Onofre 1	P	R100 (Transfer To 2&3)	R125 (Transfer to 2&3)
San Onofre 2	P	R100	R125
San Onofre 3	P	R100	R125
Seabrook	P	R100.HH	R125.HH
Sequoyah 1	P	R100	R125
Sequoyah 2	P	R100	R125

Pool	Fuel Type	Reference Scenario	MPC System
Shoreham	B	R100.HH	R125.HH
South Texas 1	P	R100.HH	R125.HH
South Texas 2	P	R100.HH	R125.HH
St. Lucie 1	P	Truck	Truck
St. Lucie 2	P	R100.Barge	R125.Barge
Surry 1	P	R100.Barge	R125.Barge
Surry 2	P	R100.Barge	R125.Barge
Susquehanna 1	P	R100	R125
Susquehanna 2	P	R100	R125
Three Mile Island	P	R75	R75
Trojan	P	R100.HH	R125.HH
Turkey Pt. 3	P	R100.Barge	R125.Transfer.Barge
Turkey Pt. 4	P	R100.Barge	R125.Transfer.Barge
V.C. Summer	P	R100	R125
Vermont Yankee	BP	Truck	Truck
Vogtle 1	P	R75.HH	R75.HH
Vogtle 2	B	R75.HH	R75.HH
Washington Nuclear 2	P	R100.HH	R125.HH
Waterford 3	P	R100	R125
Watts Bar 1	P	R100	R125
Watts Bar 2	P	R100	R125
Wolf Creek	P	R100	R125
Yankee Rowe	P	Truck	Truck
Zion 1	P	R100	R125.Transfer
Zion 2	P	R100	R125.Transfer